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#34/ EXT. (1mo) Appeal Brief

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): **Delabastita et al.** Examiner: **M. Angebranndt**
Serial No.: **08/782,866** Art Unit: **1756**
Filed: **01/13/97** Dkt. No.: **GV-2166**
Title: **METHOD FOR MAKING A LITHOGRAPHIC PRINTING PLATE**

Assistant Commissioner for Patents
Washington D.C. 20231

BRIEF OF APPELLANTS

This is an appeal from the final rejection of the Examiner dated October 27, 1999, rejecting claims 1, 4-8, and 11-12. This Brief is accompanied by the requisite fee set forth in 37 C.F.R. §1.17.

REAL PARTY IN INTEREST

Agfa-Gevaert N.V. is the real party in interest.

RELATED APPEALS AND INTERFERENCES

A related Appeal has been filed in patent application serial number 08/908,129, filed 08/11/97. There are no related interferences.

STATUS OF CLAIMS

As filed, this case included claims 1-7. Claims 8-12 have been added, and claim 9 has been canceled. Claims 2 and 3 are

objected to by the Examiner. Claims 1, 4-8, and 11-12 stand rejected and form the basis of this appeal. Claim 10 was not addressed by the Examiner in the final rejection, and is therefore presumed to include allowable subject matter. No claims have been allowed.

STATUS OF AMENDMENTS

An After-Final Amendment has not been filed.

SUMMARY OF THE INVENTION

The present invention provides a method for making a lithographic printing plate. More particularly, the present invention provides a method for making a lithographic printing plate from a lithographic printing plate precursor having a support, wherein an original containing continuous tones is screened using frequency modulated screening.

The present invention provides a method for making a lithographic printing plate from an original containing continuous tones generally comprising, *inter alia*, the steps:

screening said original to obtain screened data, wherein the screening is a frequency modulation screening;

scan-wise exposing a lithographic printing plate precursor according to said screened data, said lithographic printing plate

precursor having on a support a surface capable of being differentiated in ink accepting and ink repellant areas upon said scan-wise exposure and an optional development step; and

optionally developing a thus obtained scan-wise exposed lithographic printing plate precursor.

ISSUES

1. Whether claims 1, 4, 6, 7, and 11-12 are unpatentable under 35 U.S.C. 103 over either Saikawa et al. (US 4,501,811) or Monbaliu et al. (US 5,283,156) in view of Stoffel et al.

2. Whether claims 1, 4, 5, 7, and 11-12 are unpatentable under 35 U.S.C. 103 over Peterson (US 4,020,762) in view of Stoffel et al.

3. Whether claims 1, 4-8, and 11-12 are unpatentable under 35 U.S.C. 103 over either Saikawa et al., Peterson, or Monbaliu et al., in view of Stoffel et al., Harper's Dictionary of the Graphic Arts, Evans et al. (US 5,023,229) and Ellis et al. (5,171,650).

GROUPING OF CLAIMS

Claims 1, 4-8, and 11-12 stand or fall together.

ARGUMENT

Independent claims 1 and 11 set forth a method for making a lithographic printing plate from an original containing continuous tones using a frequency modulation screening. Neither Saikawa nor Monbaliu disclose anything regarding the electronic (e.g., frequency modulation) screening of a **continuous tone original**. Saikawa, for example, uses photomechanically screened data (col. 8, lines 54-59) to expose the photosensitive material of a lithographic printing plate. Further, both Saikawa and Monbaliu disclose the exposure of a printing plate precursor to screened imagery (Saikawa, col. 9, lines 29-30, Monbaliu, col. 17, lines 55-56), having a line ruling, i.e., pointing to the use of amplitude modulation **(AM)** binary **non-electronic** screening.

The 35 U.S.C. 103 rejections of independent claims 1 and 11 are additionally based on the unsubstantiated assertion that "[i]t would have been obvious to one skilled in the art to include frequency modulation screening techniques such as error diffusion taught by Stoffel et al. '(1981) in the techniques of producing printing plates" disclosed by Saikawa, Monbaliu, or Peterson, "with a reasonable expectation of gaining the benefits taught by Stoffel et al. '(1981), based upon the disclosure of Stoffel et al. '(1981) that this technique is applicable to lithography" (see, e.g., Final Office Action, page 3).

Applicants respectfully disagree with the Examiner's conclusion.

Saikawa, Monbaliu, and Peterson disclose various techniques for making and/or imaging lithographic printing plates. Saikawa, Monbaliu, and Peterson, however, are completely silent with regard to the use of frequency modulation screening. Indeed, as detailed *supra*, Saikawa and Monbaliu clearly direct one of ordinary skill in the art toward the use of amplitude modulation **(AM)** binary **non-electronic** screening. The Examiner relies on the alleged teachings of Stoffel to overcome this deficiency in Saikawa, Monbaliu, and Peterson.

Stoffel does not teach or suggest that the benefits provided by error diffusion are specifically applicable to lithographic printing. Indeed, Stoffel only discloses (page 1907, right column) that error diffusion can be applied to computer output microfilm (COM) and binary displays. There is **absolutely no disclosure regarding lithography in the sections of Stoffel directed to error diffusion, and absolutely no disclosure of how any benefits of error diffusion could, if at all, be utilized in lithography**. Therefore, contrary to the unsupported allegations of the Examiner, one of ordinary skill in the art would not be motivated to apply electronic error diffusion to lithography, based on the teachings of Stoffel.

Stoffel states in section B, page 1899, that "[a]lthough

lithography, xerography, etc., have different microstructural characteristics, the algorithms investigated below are compatible in varying degrees with all of them." This statement, however, without any specific discussion of the applicability of, and benefits provided by, the various disclosed algorithms to the various output processes, **and specifically to lithography**, is merely an unsupported generalization. Thus, one of ordinary skill in the art would not be motivated by such an unproven statement to utilize a frequency modulation screening (e.g., Stoffel's error diffusion) to make a lithographic printing plate as set forth in the claims of the present invention. In other words, it would not be "obvious to try" the error diffusion of Stoffel upon the lithographic material of Saikawa, Monbaliu, or Peterson, absent some specific teaching (e.g., benefit, advantage, etc.) disclosed by Stoffel that would motivate one of ordinary skill in the art to do so. Such a teaching that **specifically** links the use of, and benefits provided by, error diffusion with lithography, is nonexistent in Stoffel. Thus, it is speculative at best to derive from Stoffel that lithography on a support would be beneficial in any way in combination with error diffusion.

Regarding the Examiner's statement that it would have been obvious in view of Stoffel to include frequency modulation

screening techniques "with a reasonable expectation of gaining the benefits taught by Stoffel" (see, e.g., Office Action, page 3, fourth paragraph), Applicants submit that Stoffel actually teaches that the disadvantages of error diffusion heavily outweigh any benefits. Thus, one of ordinary skill in the art would clearly be directed away from using error diffusion techniques in lithography. Examples of the disadvantages pointed out by Stoffel (see, Stoffel page 1907, right column, last three paragraphs, through page 1908, left column) include:

1. No control over the shape of the Tone Reproduction Curve (TRC). Persons skilled in the art of reproduction by lithography see tone reproduction as a very important issue, most importantly in flesh tones. Lack of control over the shape of the TRC is a serious disadvantage for lithography.
2. "error diffusion techniques often result in relatively isolated and very unconstrained microstructural detail. [...] such detail imposes repeatability requirements on the marking process to avoid **tone scale errors** throughout the range." Again, the tone scale is very important in lithographic printing, and also its repeatability. Imagine what would happen if the packing of medicaments for an identical product in a pharmacy would show different colors.
3. The phase of detail in the image is not always reproduced

consistently. This is an important drawback for printed work with repeated patterns (e.g., bricks in a wall of a building, stripes on a shirt).

4. Edge location will be translated spatially depending upon the image content above and to the left of the edge. This may lead to "cracks" in the reproduction of an edge, where these cracks were not present in the original, thereby severely deteriorating the reproduction.

5. Edge noise: printers try to attempt clean edges. A clean edge may be achieved by a "partial dot" (a nonisophot) as shown in Stoffel, Fig. 18, i.e., by AM screening.

6. The error diffusion process is capable of creating output signals which have **relatively low spatial frequencies** and are therefore **more visible** than, say, electronic screening. Furthermore, these low frequencies can occur throughout the tone scale. Stoffel compares error diffusion with "electronic screening" (i.e., AM screening) and ranks the quality in that aspect for AM screening higher than the quality of error diffusion. In fact, low frequency tone scale variations are very annoying and conspicuous in printed matter.

7. Another artifact, which is most visible in highlight or shadow regions, is the "avalanche" structure of the output

[... with] near diagonal line structures. It is clear to the person skilled in the art that such an artifact is absent for AM screening.

8. It is possible to reduce the context for error minimization calculations to a very small number (1), but the resultant detail structure is very **oscillating and "noisy."** Empirically it was found [39] that a **minimum of 12 pixels** will likely be needed for most applications. [...] The result is a context of 12 pixels (3 scanlines), and an equivalent number of additions. Given the fact that continuous tone images for lithography require a high spatial resolution, it is clear for the person skilled in the art that a multiplication of the computational effort (per pixel) by a factor 12 is highly undesirable. Moreover, storage must be provided for storing 3 scanlines, which may also require a substantial amount of storage for a high spatial resolution image.

Clearly, the drawbacks of error diffusion are of such a high number (see, e.g., points 1-8 above) that a person skilled in the art would be entirely discouraged from combining error diffusion with lithography.

Stoffel provides a single benefit for error diffusion. However, this benefit is not associated with, or discussed in

conjunction with, lithography. Specifically, Stoffel discloses that "the detail rendition capabilities of diffusion are excellent" (Stoffel, page 1907, last paragraph). This is in fact an important benefit for low spatial resolution systems such as binary displays, 300 dpi electrophotographic printers, 200 dpi ink jet printers, etc. However, for imagesetters or platesetters used in the production of lithographic printing plates, this advantage is far less important, because the high addressability of such systems, up to 2400 dpi, allows the rendition of details that are hardly noticeable at a normal viewing distance. This follows also from Stoffel at page 1905, right column, lines 10-11, where Stoffel states that "[i]n terms of fine detail rendition, electronic halftoning is capable of reproducing **high contrast detail**," and lines 13-16, where Stoffel states that "[t]his is the most remarkable feature of the halftoning process, since it very naturally allows the highest possible frequencies of <u>fine detail</u> to be preserved while still generating a full gray scale." Thus, according to Stoffel, the benefit of detail rendition by error diffusion is also offered by AM screening. Therefore, why would a person skilled in the art contemplate the use of error diffusion for purposes other than low resolution (ink jet, ...) printing, especially in view of the serious disadvantages associated with error diffusion?

In the Final Office Action, the Examiner further asserts on page 3, third paragraph, that Stoffel teaches "various techniques for use in scanning and screening images such as photographs and camera images to produce halftone images which are useful with binary output devices such as lithography (Page 1898/col 1/paragraphs 1-2)." This is incorrect. More correctly, Applicants submit that Stoffel teaches that the survey has a restriction in that: "pictorial encoding is restricted to binary output devices such as **plasma display panels, laser xerography, lithography, or ink jet printers**" (see page 1898, left column, I. Introduction, second paragraph). In the same paragraph, the Examiner states that "Pages 1907, 1908, 1915, 1916 and tables I & II [of Stoffel] describe the process of error diffusion and the benefits." Applicants disagree. First, it is noted that pages 1915 and 1916 have an important difference with respect to the present invention as claimed. In fact, the section of Stoffel entitled "E. Error Diffusion" on pages 1915-1916 refers to "HALFTONE PICTORIAL REPRODUCTION" (see page 1908, right column, section VI). This pictorial is clearly different from the "original containing **continuous tones**" as claimed in claims 1 and 11. "CONTINUOUS TONE REPRODUCTION" is discussed under Stoffel's section V., starting on page 1901, left column up to page 1908, right column. The Examiner's attention is also drawn to the fact

that the above mentioned Table II refers to "halftone reproduction," which is not relevant for claims 1 and 11. From the above it is clear that the Examiner picks from a voluminous article, those words ("error diffusion") or paragraphs that seem to be relevant for rejecting the claims, even if the paragraphs are not relevant for assessing the patentability of the invention as claimed. Moreover, Stoffel's article does not only describe the process of "error diffusion," but describes various processes for continuous tone reproduction including:

A. Globally Fixed Level Thresholding

B. Locally Adaptive Thresholding

    1) Line Copy Adaptive Thresholding

    2) Constrained Average Thresholding

C. Orthographic Tone Scale Creation

D. Electronic Screening (i.e., amplitude-modulation (AM) or autotypical screening)

E. Pseudorandom Thresholding, Ordered Dither

F. "Error Diffusion" Techniques (i.e., a form of frequency modulation (FM) screening).

Screening technique D., i.e., AM, is described in conjunction with "mass-produced (magazines, newspapers, etc.) printed pictorial imagery" (see Stoffel, page 1905, right column). **Therefore, Stoffel unmistakably points to the direction**

of "dot screens," i.e., "AM screening" for lithography. Technique F., i.e., an FM technique, on the other hand, is taught by Stoffel for a non-binary screening technique such as COM or computer output microfilm (see Stoffel page 1907, right column, under section F, second paragraph) and for use in binary displays (*ibidem*, third paragraph). There is no hint in Stoffel's article that error diffusion could be used for lithographic printing.

Applicants have discovered that various advantages, not previously disclosed, suggested, or recognized in the prior art, are provided by using frequency modulation screening in lieu of conventional techniques (e.g., the autotypical (AM) screening of Monbaliu) to make lithographic printing plates. For example, as disclosed on page 5, lines 2-19, of the disclosure, the use of frequency modulation screening allows an accurate proof to be generated using low cost, low complexity, and low resolution systems (see also claim 10). None of the references cited by the Examiner teach or suggest that such an advantage is provided through the use of frequency modulation screening with lithographic printing plates. In fact, **Stoffel fails to disclose any advantages associated with the use of frequency modulation screening with lithographic printing plates**.

In the sentence bridging pages 3 and 4 of the Final Office Action, the Examiner alleges that the "[a]pplicant admits that

Stoffel et al. specifically states that the use of the algorithms described are compatible with lithography ..." This is incorrect. Rather, Applicants have merely acknowledged the existence of this unsupported generalization in Stoffel. Clearly, one of ordinary skill in the art would not be motivated by such an unproven statement to utilize a frequency modulation screening (e.g., Stoffel's error diffusion) to make a lithographic printing plate as set forth in the claims of the present invention.

On page 4, last three (3) lines, the Examiner further alleges that "the output of the lasers [in Saikawa or Monbaliu] are controlled by digital data to produce the image." This is incorrect. The "control by digital data" is not disclosed in either Saikawa or Monbaliu. Rather, Saikawa discloses (col. 8, lines 54-61) that the "photosensitive material was exposed for 10^{-5} second to the radiation beam from a neon-helium laser device ... **through a gray contact screen** ... in close contact with the photosensitive material by means of a **neutral gray wedge**." Thus, in Saikawa, different exposures are obtained using a contact screen and a gray wedge (i.e., the image data is not provided electronically), not through the modulation of a laser beam according to digital data. Monbaliu also fails to disclose the "exposure control by digital data."

On page 7, line 4 of the Final Office Action, the Examiner relies on the teaching of chapter VI of Stoffel. Applicants submit, however, that chapter VI of Stoffel is not relevant to the claimed invention. In particular, claim 1 recites "from an **original containing original tones**," while Stoffel's chapter VI discusses originals having "[binary] **halftone pictorials**" (see first paragraph).

In the sentence bridging pages 7 and 8 of the Final Office Action, the Examiner "considers the broad disclosure of Stoffel et al. (1981) as evidence of the flexibility of the technique and based on this does **not find** reason **not to connect** this with lithography based upon the disclosure to use this and other screening techniques with lithography." Such negative logic is contrary to the requirements that are necessary to establish a *prima facie* case of obviousness as set forth in section 706.02 of the MPEP. As detailed in this section of the MPEP, "there must be some suggestion or motivation [not the lack of suggestion as stated by the Examiner] either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings." Applicants submit, as stated *supra*, that the Examiner has failed to provide any motivation to connect frequency modulation with scan-wise exposure of a lithographic printing plate as required

in claims 1 and 11 of the present invention.

Claims 1, 4-8, and 11-12 are additionally rejected under 35 U.S.C. 103 as being unpatentable over either Saikawa, Peterson, or Monbaliu in view of Stoffel, Harper's Dictionary of the Graphics Arts (1963), Evans et al., and Ellis et al. Applicants respectfully traverse this rejection for reasons similar to those set forth above.

Accordingly, Applicants respectfully submit that claims 1-8 and 10-12 are allowable. Applicants would also like to point out that the European patent application (93201115.8) corresponding to the patent application under appeal was examined by the EPO in view of Stoffel, and was granted on July 24, 1996 (EP 0 620 674 B1). In addition, the European patent successfully withstood an Opposition Proceeding instituted on April 22, 1997, with the European patent being maintained as granted. Further, an appeal on Opposition instituted on December 8, 1998 was dismissed by the European Patent Office's Board of Appeal in a decision dated January 17, 2000.

Respectfully submitted,

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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Serial No.: **08/782,866** Art Unit: **1756**
Filed: **01/13/97** Dkt. No.: **GV-2166**
Title: **METHOD FOR MAKING A LITHOGRAPHIC PRINTING PLATE**

APPENDIX - CLAIMS ON APPEAL

1. A method for making a lithographic printing plate from an original containing continuous tones comprising the steps of:

- screening said original to obtain screened data;
- scan-wise exposing a lithographic printing plate precursor according to said screened data, said lithographic printing plate precursor having on a support a surface capable of being differentiated in ink accepting and ink repellant areas upon said scan-wise exposure and an optional development step; and
- optionally developing a thus obtained scan-wise exposed lithographic printing plate precursor, characterized in that said screening is a frequency modulation screening.

2. A method according to claim 1 wherein said frequency modulation screening proceeds according to the following steps:

- selecting an unprocessed image pixel according to a space filling deterministic fractal curve or a randomized space filling

curve and processing said unprocessed image pixel as follows:

-determining from the tone value of said unprocessed image pixel a reproduction value to be used for recording said image pixel on a recording medium,

-calculating an error value on the basis of the difference between said tone value of said unprocessed image pixel and said reproduction value, said unprocessed image pixel thereby becoming a processed image pixel,

-adding said error value to the tone value of an unprocessed image pixel and replacing said tone value with the resulting sum or alternatively distributing said error value over two or more unprocessed image pixels by replacing the tone value of each of said unprocessed image pixels to which said error value will be distributed by the sum of the tone value of the unprocessed image pixel and part of said error,

-repeating the above steps until all image pixels are processed.

3. A method according to claim 2 wherein said original having continuous tones is subdivided in matrices of unprocessed image pixels and all of said image pixels within a matrix are processed before a subsequent matrix is processed.

4. A method according to claim 1 wherein said lithographic printing plate precursor contains a photosensitive layer.

5. A method according to claim 1 wherein said lithographic printing plate precursor contains a heat mode recording layer containing a substance capable of converting light into heat.

6. A method according to claim 1 wherein lithographic printing plate precursor contains a silver halide emulsion layer and an image receiving layer containing physical development nuclei and wherein subsequent to said scan-wise exposure said lithographic printing plate is developed using an alkaline processing liquid in the presence of developing agent(s) and silver halide solvent(s).

7. A method according to claim 1 wherein said scan-wise exposure is carried using a laser or LED.

8. A method according to claim 1, further including the step of:

simulating the printing results obtained using the lithographic printing plate by generating a printing proof.

10. A method according to claim 8, wherein the simulation step is

performed using a printing system with lower resolution than lithographic printing.

11. A method for making a lithographic printing plate from an original containing continuous tones comprising the steps of:

screening said original using a frequency modulation screening to obtain screened data; and

scan-wise exposing a lithographic printing plate precursor according to said screened data, said lithographic printing plate precursor having on a support a surface capable of being differentiated in ink accepting and ink repellant areas upon said scan-wise exposure.

12. A method according to claim 11, further including the step of:

developing the scan-wise exposed lithographic printing plate precursor.